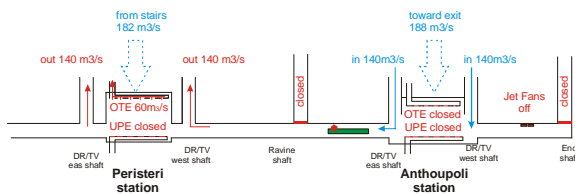
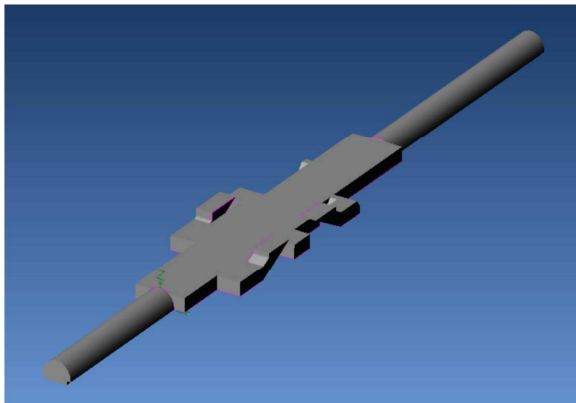


Network of Metro Athens: frames indicate the stations of the line extensions of Line 2 and 3



Smoke extraction concept in case of a train fire in the tunnel between two stations of the extension of Line 2



3-dimensional simulation of the smoke propagation in case of a train fire in the Peristeri station

## Description

The network of Metro Athens was put into operation in January 2000 and comprises two lines: Line 2 (red) and Line 3 (blue). In 2008, 23 stations are in service. They ensure rapid, comfortable and reliable travel in the centre of Athens. The metro network can be divided into three parts:

- stations of the initial construction phases
- stations of the extensions of the first generation
- stations of the extensions of the second generation

On average, Metro Athens transports every day 600'000 travellers.

## Services

HBI Haerter Consulting Engineers provided the following services:

- Verification of the ventilation system and the smoke extraction for the line extensions for the three operation modes (normal, emergency and degraded):
  - air temperature
  - air velocity
  - pressure fluctuation
  - air humidity
- 1-dimensional unsteady simulations of the pressure fluctuation in the tunnels and the stations with the software ThermoTun
- 1-dimensional unsteady simulations for the verification of the temperature and the humidity in the tunnels and stations with the software SES
- 1-dimensional unsteady simulations for the verification of the efficiency of the smoke extraction system in case of a train fire in the tunnel with the software SES
- 3-dimensional unsteady simulations (CFD) for the verification of the smoke extraction system in case of a train fire in the station with the software CFX